

FOLIO

THE UNIVERSITY OF ALBERTA STAFF BULLETIN

EDMONTON, ALBERTA

3 JUNE 1976

President's Convocation Address

The following address was presented by University President H.E. Gunning at Spring Convocation, which was held from 26 to 28 May.

In this convocation address I would like to deal with a national problem so all pervadingly serious that it will have implications for the health, economic well-being, and national pride of every Canadian, now and in the future. I refer to the policies of our present federal government with respect to research and development in this country.

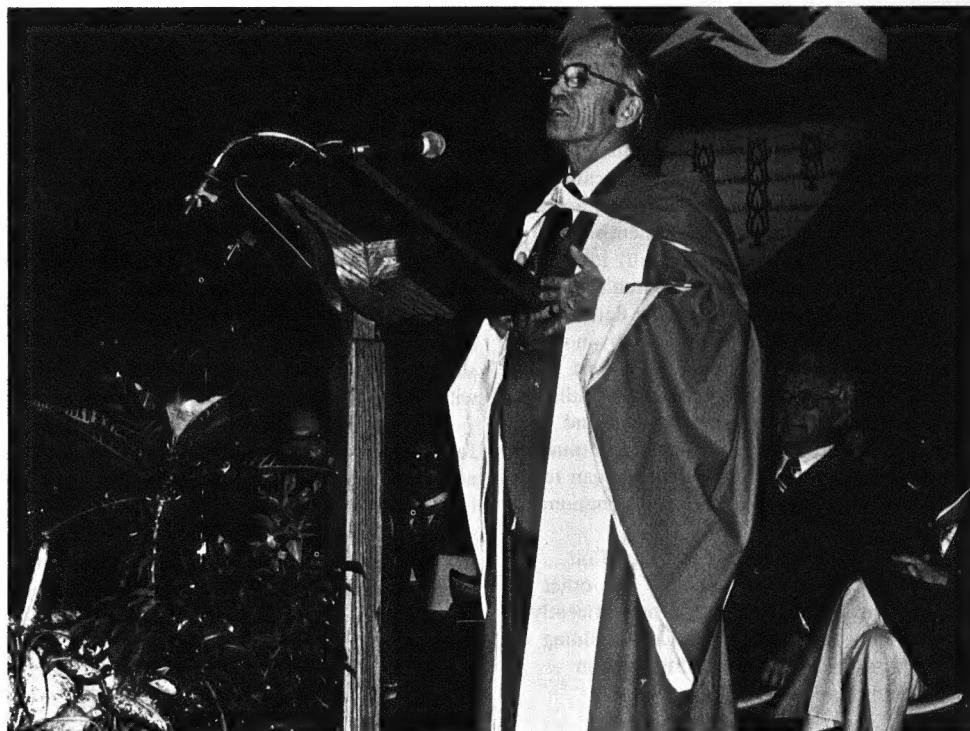
In my view, and in the view of thousands of others who care about the future of this country, our federal government will stand accused before the tribunal of history as that government which contributed to a major delay to making this country economically and intellectually subservient to other more progressive nations.

Whether we are dealing with medicine, agriculture, business, or the management of our natural resources, there is no time in our history when we needed, more acutely, science-based solutions to our national and regional problems. And to meet this obvious national need, what response do we get from Ottawa? We get a response which clearly indicates that those in power there have isolated themselves from the real needs of Canadian society. There could be no other reason for policies which have resulted in drastic cutbacks in the support of research in all areas in this nation.

As I will clearly demonstrate, these retrograde federal policies are seriously impairing our capability to stand on our own feet as a nation, and, in addition, we are being pushed still further along the road toward that total branch-plant economy so abhorrent to Canadians.

In order fully to appreciate the seriousness of the situation in which this nation finds itself as a result of a policy of progressively winding down research support over the past eight years, we must look at the problem in its historical context.

Over the eleven decades that Canada has existed as a nation, it has had an extremely poor record for supporting invention,



Richard Kerr

T.C. Douglas, Premier of Saskatchewan from 1944 to 1961 and leader of the New Democratic Party from 1961 to 1971, received an Honorary Degree of Doctor of Laws at Spring Convocation on 28 May.

innovative research, and development. In the main we have let other nations do the research and take the risk, while we tried to reap the benefits, all the while complaining about our progressive loss of national sovereignty.

Those interested, for example, in the fate of Canadian inventors should read that excellent book by J.J. Brown entitled *Ideals in Exile, A History of Canadian Inventions*. The title tells it all—of Canadian inventions developed elsewhere. When I think of this subject, what comes to mind is my experience as a student in the late thirties at the University of Toronto. At that time it was my privilege to become acquainted with a truly outstanding Canadian, Sir Frederick Banting—the co-discoverer of

insulin. Through many fascinating conversations with this distinguished medical scientist, I learned at first hand the enormous efforts that he had expended seeking Canadian support so that the manufacture of insulin could take place in his beloved Canada. Unfortunately it was all to no avail, and ultimately, insulin production was located in the United States. This was probably the most disillusioning experience in Banting's life, since he was first and foremost a Canadian. It is unfortunately but one example of the many "ideas in exile" which Mr. Brown discusses in his book on Canadian inventors.

One of the major problems to be solved in the successful growth of any nation is to determine how the collective creative vitality of its citizens can be maintained at a high

level. This is especially true in the field of science, where inadequate support may cause inestimably great damage as I will show later in this address.

What we have that is good in Canadian science can be traced to the very sound policies laid down by Canada's greatest scientist-statesman, the late Dr. E.W.R. Steacie. In the late forties and early fifties, Dr. Steacie, as Vice-President and later President of the National Research Council, was a leader in formulating policies which were to provide a base for the development of Canadian science. Dr. Steacie began by surrounding himself at the National Research Council with a group of first-rate scientists who represented the highest standards of this demanding profession. Working with Dr. Steacie, this core of scientists became the referees in determining how research grants would be awarded to individual scientists in the universities. They set the critically important policy that the magnitude of research support to any academic scientist would be determined by his or her scientific stature and by no other consideration. As a result, the best scientists in the academic community rallied round the National Research Council and gave it their full support. For the first time in Canada's history, academic science began to move toward some measure of international stature.

With federal research support based on academic excellence, universities and other research institutions responded magnificently by attracting outstanding scholars, building up research teams at the forefront level in many fields, and, in general, laying the

intellectual foundation from which could arise Canadian solutions to Canadian problems. Let me cite but one example which may not be known to many Canadians.

Several weeks ago a characteristically small article appeared in the *Edmonton Journal* with the title "Biochemist's funeral set for Thursday in Saskatoon." The deceased was Dr. Joseph Francis Morgan, head of the Cancer Research Institute at the University of Saskatchewan. Joe Morgan and I had been friends since 1945 when we were both in Ottawa, he as a biochemist in the Department of National Health and Welfare and I as a research chemist at the National Research Laboratories. It was Joe Morgan's research group which developed the medium in which the Salk polio vaccine could be produced. The importance of this fundamental discovery is difficult to over-emphasize. Without this medium, mass production of the polio vaccine would have been impossible, and, therefore, as a result of this discovery by a brilliant Canadian scientist, the world has been spared enormous suffering and we as Canadians should be proud we share the same birthright with this great man.

It is accomplishments such as these, and Joe Morgan had many others in the making at his untimely death at the age of fifty-eight, that give us a just pride in saying—"I am a Canadian."

What Dr. Morgan created required complex scientific instruments, highly trained research personnel, and a system of national research support which emphasizes the quality of the investigator.

The present Ottawa government has reversed this enlightened direction in research support, and one gets the impression that before this national travail is over the gargantuan efforts that have been expended by so many of our scientists to build up a major research capability in Canada may have been all for naught.

In order to bring to the attention of the Prime Minister the deep concern and, I might add, the rising anger of the scientific community with respect to present government policy on the support of science and innovation, the Royal Society of Canada submitted to Mr. Trudeau an important brief expressing in quantitative terms what has happened to the nation's support of research and development since 1969, shortly after the present government took office. The facts that I shall now quote are from this brief.

Many studies in the late sixties provided clearcut evidence that government support of industrial research development had been decidedly inadequate. As a result, in 1970 the federal government increased by approximately

20 percent its support of industrial research. This encouragement to the industrial sector was, however, very short-lived. By 1975 government support of this important function had fallen to 87 percent of the 1969 level, and in 1976 the situation will worsen still more.

Research in science and engineering in Canadian universities has been much more harshly treated by the present government than has the industrial sector. Since 1969 academic research in science and engineering has suffered a steeply descending decline in federal support, so that today it now stands at about 60 percent of its 1969 level expressed as a fraction of GNP.

There has also been a disheartening drop since 1969 in the federal support of medical research in this country, with the result that present levels are no more than 75 percent of what they were in 1969.

Describing current government policy with respect to the support of university research, Dr. W.B. Lewis, the President of the Royal Society of Canada, concludes that the government's objective would appear to be "gradual extinction" of such activities in our universities.

Perhaps the greatest tragedy in our society is that those in power can make decisions which may do incalculable damage to our future well-being as a nation, and that, by the time the necessary political forces can be marshalled to restrain this irresponsible course of action, the damage has been done and the nation continues to suffer long into the future.

The need for more and better research in this country can be readily illustrated by simply quoting some of the federal ministerial pronouncements emanating from Ottawa in recent years. For example, in 1971 Mr. Joe Green, the Energy Minister at that time, made the following statement concerning Canada's petroleum resources: "Canada's total petroleum reserves represent 923 years for natural gas and 392 years for oil. The tough job is getting sales."

Now you will notice, Eminent Chancellor, that Mr. Green did not say that our natural gas reserves would last around nine hundred years, which might imply anything between eight hundred years and a thousand years. No! Mr. Green stated 923 years, which gives the impression that in the Year of our Lord 2894, plus or minus six months, our gas reserves peter out. A similar catastrophe would mark the end of our crude supplies in 2363 A.D.

The statement which I have quoted from Mr. Green should be contrasted with the conclusions of a recent report on the same matter produced over the signature of the

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1. nent Energy Minister from the same government. What this report says, in brief, is that Canada lost its energy self-sufficiency some two years ago. Or, in other words, Mr. Green's estimate of 923 years for our natural gas reserve was marginally in error by 925 years! My point is that we have no reason to stand in awe at the level of wisdom exhibited in federal government decision-making. And we must bear in mind that this is the same government that is deciding for us that Canada needs less and less research so that this country can become more and more dependent on the creativity of other nations.

Just as governments can make decisions and not fully realize the consequences to those being governed, so, too, the people themselves may acquiesce in such decisions either because they are uninformed or because they have been purposely misinformed. Our society is extraordinarily complex, and it is perhaps unreasonable to expect people to be fully informed on every issue. Such extenuation, however, does not apply to governments, where the means, that is the taxpayers' dollars, are readily available for obtaining the best advice on any subject.

The impact of current federal policies on forefront research in the universities has been a little short of devastating. The malignancy permeates every aspect of our research efforts.

Let me deal first with the field which concerns us all, regardless of our prejudices and our specialized interests. I refer, of course, to medical or health research, where federal support is now less than 80 percent of what it was in 1969 when evaluated as a fraction of the GNP.

In general, research on major problems in the field of medicine tends to proceed at two levels, both requiring very highly specialized research teams. There will be a fundamental research group investigating the problems at the cellular, or even at the molecular, level, while a clinical research group takes the findings, modifies them, and attempts to adapt them at the patient care level. Such two-tier research teams must be led by highly creative medical scientists, and the vast amount of experimental work required must be performed by very specialized technicians who require years to train to their peak performance level. The best teams are integrated, interdependent structures where the individual group members are not easily lost without markedly affecting the efficiency of the entire group. These deeply dedicated workers have been responsible for much of the medical progress which has been made in recent years. One obvious result has been



Richard Kerr

Fred T. Jenner, Edmonton businessman and former Chairman of the Board of Governors, received an Honorary Degree of Doctor of Laws on 26 May at Spring Convocation.

that our lives are much richer and much more enjoyable compared to those of our forefathers.

Now, when a group of bureaucrats in Ottawa sit around a table and decide that they will lop off so many millions of dollars for the support of medical research, they seldom have any real understanding of the long-term havoc that they are wreaking on these carefully developed research groups. Thus, when funding is reduced, some members of the team must be dropped. Since this retrenchment is a national problem, those released from the team cannot utilize their skills elsewhere and, in general, they must seek new opportunities which permanently remove them from this type of research. Furthermore, such cutbacks in support prevent young scientists from entering these fields of research, and the vitality of these programs is thus impaired for years to come.

It is all very much like a group of generals sitting at a table deciding that a certain distant city should be bombed. As a result, a squadron of stratospheric bombers is despatched, armed with computer-controlled bombsights. From their comfortably safe perches in the sky, all that the bomber crews can see are little puffs of smoke as the bombs explode in the city below. They are suffused with that comforting feeling of a job well done—the mission has been accomplished. They will probably never know that one of those pretty white puffs of smoke was an orphanage, or a hospital, or a school. This is what happens when we do not have to live with the consequences of our own actions.

In medicine, a research career is nowhere near as attractive, financially speaking, as the practice of medicine. This becomes

especially true when the support of medical research declines. As a result, the sources of new ideas which have constantly revitalized Canadian medicine in the past begin to dry up. Medical students with a strong research orientation and with interest in advanced specialties will go to other countries to complete their training, and, in general, they will tend to remain there.

There are literally thousands of Canadian-educated doctors who went to the United States to obtain specialized training for which Canada lacked facilities in the past and who remained there to contribute their skills to improving the health of Americans. In a recent alumni trip to California, I met a number of University of Alberta graduates in Medicine who had gone to California some twenty years ago to take their specialties in areas where no such facilities existed at that time in Canada. Under the mediocrity-repressive policy of the present federal government towards research support, we can look forward to this unpleasant part of our history repeating itself.

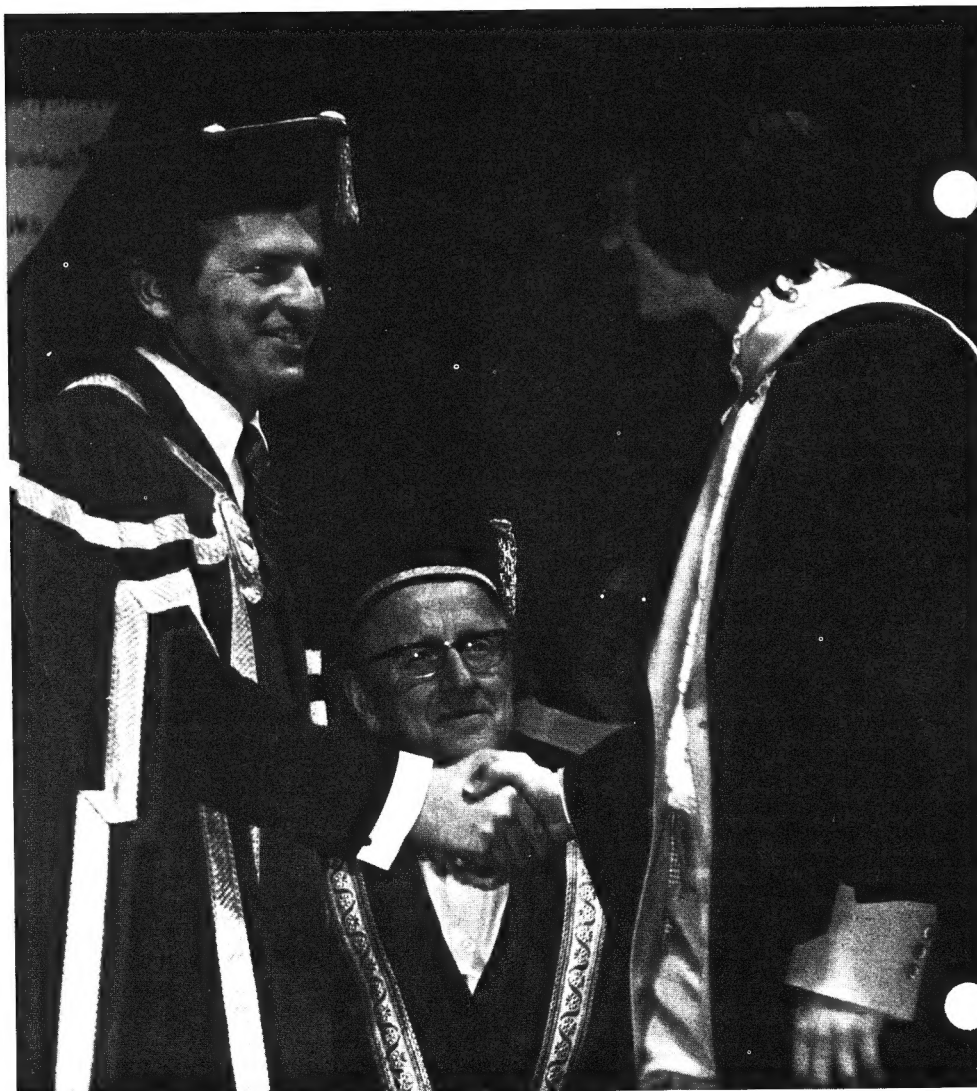
In the late sixties and early seventies, a strong interest developed in this country in a rather ill-defined subject called "national science policy." The impact of a world-wide industrial recession which had occurred in the late sixties was to bring out in bold relief Canada's inadequacies as an industrial nation. There were many who suggested that the solution to our problems lay in producing a sound science policy. The best known publication of this period was a voluminous report entitled *A Science Policy for Canada*, which was produced by a Senate committee under the chairmanship of Senator Maurice Lamontagne.

One of the major conclusions of this report was that Canada had, in the past, placed too much emphasis on basic research and not enough on applied research and development. There was much heady discussion about the mobilization of Canadian science toward the achievement of national goals. And the federal government gave every indication that it would launch large mission-oriented programs designed to focus Canada's scientific capabilities on the solution of uniquely Canadian problems. The implementation of these recommendations fell to the present federal government. What has happened has been so farcically inadequate as to constitute a kind of national tragicomedy.

As I have already pointed out, basic research in the universities, which has traditionally spawned many major industrial developments, was ultimately cut back to 60 percent of its 1969 level. The applied research in government laboratories has suffered a similar reduction, and, after a brief flurry of increased support of industrial research in the early seventies, this sector now receives from the government less than 90 percent of what it had in 1969.

There are obviously many ways in which federal governments can push the nation towards bankruptcy. Perhaps the most efficient method of achieving this undesirable goal is to so stifle and starve the innovative spirit of this country that we are forced to rely almost entirely on other countries to provide us with the highly sophisticated goods and services which we require as a developed nation. In this respect, the present government is doing an outstanding job. Our trade deficit in highly sophisticated manufactured goods is rising steadily by about one billion dollars per year.

There is a bitter lesson to be learned from this crisis in the support of research and development in this country. If we, as citizens of this country, wish to exercise our democratic rights and restrain irresponsible actions on the part of the government such as I have described to this address, it is obviously necessary that we become much better informed about the issues that constantly confront us. As you know, one of my major objectives as President of this University is to make the University more meaningful and more useful to all of the citizens who can benefit by such services. In recent months I have had many instructive discussions with our alumni association, directed towards developing mechanisms whereby the University could assist in informing our citizens, in an objective way, about various issues on which we will be required to make decisions. As a result of such discussions, there is emerging the concept of a "University Forum."



Chancellor Ron Dalby (left) and President Harry Gunning at Spring Convocation.

Richard Kerr

The function of the staff of this forum would be to gather together the very latest and best information on a given topic of immediate social concern. Thereafter, the most effective educational techniques would be used to make this information easily understandable by the lay public. The material thus developed would be available in the form of a public forum, and, also, it is projected that videotapes would be prepared which would be accessible through public broadcasting services to all citizens of the province. In this way, we are hoping to provide Albertans with unbiased information on the major current issues in our society with the full range of options available to them clearly defined. We approach this new undertaking with great enthusiasm, confident that it will have the support of many Albertans. I am particularly pleased at the enthusiastic endorsement of this concept by our alumni. They know through experience that a democratic society can only operate effectively if decisions are based on sound objective information.

L.C. LEITCH: CONVOCAATION ADDRESS

The following address was presented by Lorne Leitch, Vice-President (Finance and Administration), to Convocation on 26 May.

In 1957, immediately after Russia launched its first Sputnik, Dwight D. Eisenhower, then President of the United States, uttered the clarion call in support of higher education in the western world when he said, "Our schools are more important than our radar warning nets and more powerful than the atom." Funds flowed into our university systems, and enrolments climbed dramatically. As recently as ten years ago, educators thought that the outpouring of government money into education would never stop growing. They conceived of education as the new growth industry. Nor was there much question of accountability for the billions of dollars of public funds being spent by the various systems—particularly in the post-secondary area. Indeed, to introduce the subject of accountability in University circles

would elicit dark rumblings about infringement of academic freedom.

* The transition to the reality of the seventies, particularly for those institutions heavily dependent on government funding, has been difficult. This reality was perhaps stated best by Governor Edmund Brown of California, who said that he is trying to force interest groups competing for public funds to realize that the "era of limits" is at hand. His thesis is that government cannot fulfill an ever-expanding multitude of demands, and, he says, "I'm trying to get everyone to realize that, yes, we may have to have money for more programs, but each item is in competition with another. It is almost, though not quite, a zero-sum game," in which additional funds are almost unavailable. Governor Brown argues that it is vital to "lower expectations" of what government can do because "demands on government are far outrunning the willingness of people to invest (through taxes) in government."

* Certainly, this is the message that the Premier of this province is attempting to hammer home. The message is perhaps more difficult to sell in California, which has a substantial surplus, and in Alberta, with its Heritage Trust Fund, but we must acknowledge it is the responsibility of government to fashion its policies for the long-term.

* It is within this context that the universities must re-examine their priorities—must define their objectives. You will note that I said define, not redefine. It is not clear that the universities and colleges in this country—either individually or collectively—have ever attempted such a definition. At a recent seminar at the University of Toronto on the "Current Concerns of National Associations for Higher Education," it was stated, "... in Canada we have no collective objectives. ... Different provinces, universities, even faculties, departments, and schools, are galloping away in different directions. Resources have not always been effectively allocated, and the public has not always been convinced that the universities know where they are going or for what purpose they are spending the taxpayers' money.

* If we are indeed in something approaching a zero-sum game, then we must examine all of our programs and, if necessary, be prepared to shift resources in a way that they can be more effectively utilized. We must be prepared to review class sizes, staff-student ratios, teaching loads, support services, and to acknowledge that cost-effectiveness must find its place in importance with academic excellence.

These things the universities can and must do, but surely there must also be a commitment

on the part of government and, indeed, of the public at large. Just as government has to plan for the future, it should provide the environment in which universities can plan ahead. An important first step in this direction has been taken with the initiation by the Department of Advanced Education and Manpower of a study into the financing of post-secondary education in Alberta. It will, of course, also be necessary to define the criteria for the funding of new programs when they can be justified. In this connection, it is to be hoped that political considerations will play a minor role.

Judgments are going to have to be made with respect to the appropriate proportion of the cost of his education that should be borne by the student and by the taxpayer. Given the expressed priorities of government, tuition fees are going to continue to rise. This year we went through the somewhat traumatic exercise of putting through the first such increase since 1968. It is extremely unlikely that so much time will elapse before the next adjustment.

At the same time, if the student is going to be called upon to pay a higher proportion of the cost of his education, then the Universities are going to have to be more sensitive to what it is that he wants from them. The fact is that the generation now reaching university age is looking for those institutions to provide it with saleable skills, and not only in the professional faculties. What of course has happened in the United States and Canada is—to quote from a recent article in *Fortune*—that "... large numbers of college graduates are seeking the kinds of jobs that the job market no longer offers to all of them. The material value of their degrees has come down commensurately. For the new degree holder, the transit from education to work, once negotiated so easily, has become a passage perilous for expectations and self-esteem."

Nor am I suggesting that our universities are going to have to offer more and more conventional vocational courses. As Ernest L. Boyer, Chancellor of the State University of New York, sees it, and I quote, "There will be more of a connection between what you're studying and the vocation to which you are pointing, but with it will be a renewed interest in the liberal arts." Watergate and the various corporate bribery scandals in the United States and the Skyshops affair in this country have made it abundantly clear that the concept of vocation must be broadened. Chancellor Boyer goes on to state, "There will be a sharpening of the view that being an educated person has something to do with goodness and values. We're going to

have to prepare better for the ethical and moral issues that grow out of our expected vocation."

The point, of course, must be made that, although the universities will have to recognize a greater degree of vocational orientation in the system, higher education must not be made into the servant of the labor market. I think it is fair to state that it was precisely this prospect that struck a chill into the hearts of many of my colleagues when the provincial government saw fit to combine the portfolios of Advanced Education and Manpower. Thus far, at least, our fears appear to have been ill-founded.

This brings me to the crux of my remarks this afternoon—the importance of developing procedures which will reconcile governments' and the communities' legitimate concern for accountability on the part of its post-secondary system and the necessity for the institutions in that system to retain their autonomy.

It is difficult to define the line between the legitimate role that politics must play in higher education's decision-making process and higher education's territorial imperative. However, legislative involvement becomes unwarranted interference when it impinges on the academic integrity of our universities; when decisions of governance, institutional management, academic policy, program planning, admission requirements, faculty duties, and other related issues are made, not within the institutions themselves, but within the legislature.

The satisfactory reconciliation of the objectives of government on the one hand, and the universities on the other, can only take place in an atmosphere of mutual trust and confidence: I have already acknowledged the existence of a considerable degree of paranoia in the universities as our comfortable pews have been shaken by the dramatic changes that have taken place over the last five or six years. These changes include the flattening out in enrolments and the consequent decline in the relative level of funding; the phasing out of The Universities Commission, which the institutions considered to be an important buffer between themselves and government; and, perhaps most importantly, the perceived change in the attitude of the public and its legislators towards higher education. On its part, government has exhibited a tendency to introduce measures affecting the universities which it claims reflect wide consultation when, in fact, discussions have been minimal.

Notwithstanding a certain wariness on both sides, it is essential that there be frank and continuing dialogue between Advanced Education and Manpower and representatives

of the post-secondary system which will result in the defining of criteria which will permit the measurement of progress towards agreed goals yet not require progressively greater government regulation. In this respect, one of the most heartening events as far as the universities are concerned was the response of the Minister to the Adult Education Act proposal. The fact that he was prepared to abandon it completely in response to strong representations from various sectors augurs well for the kind of relationship that I envisage.

Before there can be accountability in any meaningful sense, and I repeat, we must define the objectives of higher education. One of the best statements that I have seen is contained in the *Fortune* article that I borrowed from earlier. To paraphrase slightly:

What seems lacking in higher education is a statement of aspirations—our hope for what the country may become. The hope surpasses markets, job skills, and payoffs; it is a hope that we may become an educated society. An educated society is one that acts dispassionately, votes intelligently, respects cultural and literary excellence, rejects yahoos, abhors bigotry, and admires scholarship. It perceives richness in leisure as well as work, understands the past, transmits a sense of human decency and compassion to new generations, and knows enough about freedom to protect it.

Above all others in society, educational institutions have the responsibility to define these values, to preserve them, and to teach them. It is not entirely clear that we honorably discharged that responsibility in the 1960s. Today, our educational institutions face a different but no less rigorous task.

**ATHABASCA HALL:
SOMETHING OLD,
SOMETHING NEW**

A stroll past Athabasca Hall these days takes many by surprise. The old residence is undergoing some considerable changes which will make it not only the oldest building on campus but one of the newest as well. What was once a carefully plastered and wood-framed interior with oak staircases, polished marble bathrooms, and ornamented radiators and stoves will become a number of fully modern, air-conditioned offices and seminar rooms designed to fit both today's needs and safety specifications.

Athabasca was originally completed in 1911 and served as the University's first official building. The Hall housed everything from the library and laboratory to the gymnasium and dormitories. As the campus developed, Athabasca Hall came to be used primarily as a residence and served in this capacity until the completion of the Lister Hall complex. Walt Hiller, the University's project manager for the renovation and Director of the

Campus Development Office, refers to Athabasca Hall as a "heritage building." Because of its historic role, he explains, Athabasca's exterior will be preserved. The inside, however, has been condemned by fire authorities and its wood-frame construction necessitates a completely new interior. Athabasca Hall is in the process of being gutted.

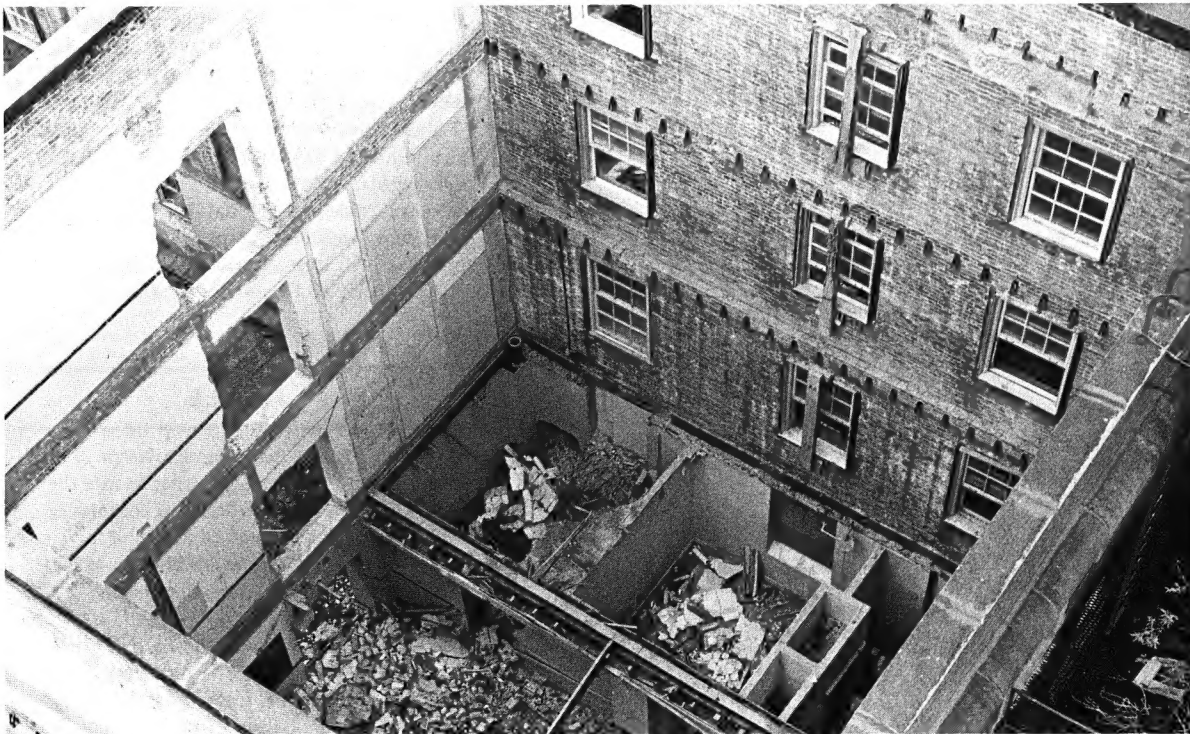
Under the contract management plan, contractors were approached and asked to submit tenders complete with schematic drawings of a proposed frame. Poole Construction Limited was selected as the main contractor and Elmer Olsen is in charge of demolition. Mr. Olsen explains that there are seven bays in the building and three bays are being removed at a time. When each bay is finished, steel-joiced concrete floors will be added. The architects will then move in to complete the work.

Paradoxically, demolition has revealed much of the building's "heritage." Unlike modern structures, Athabasca's floors have no less than five layers that include shiplap sheathing, wooden joists, and linoleum. When Poole

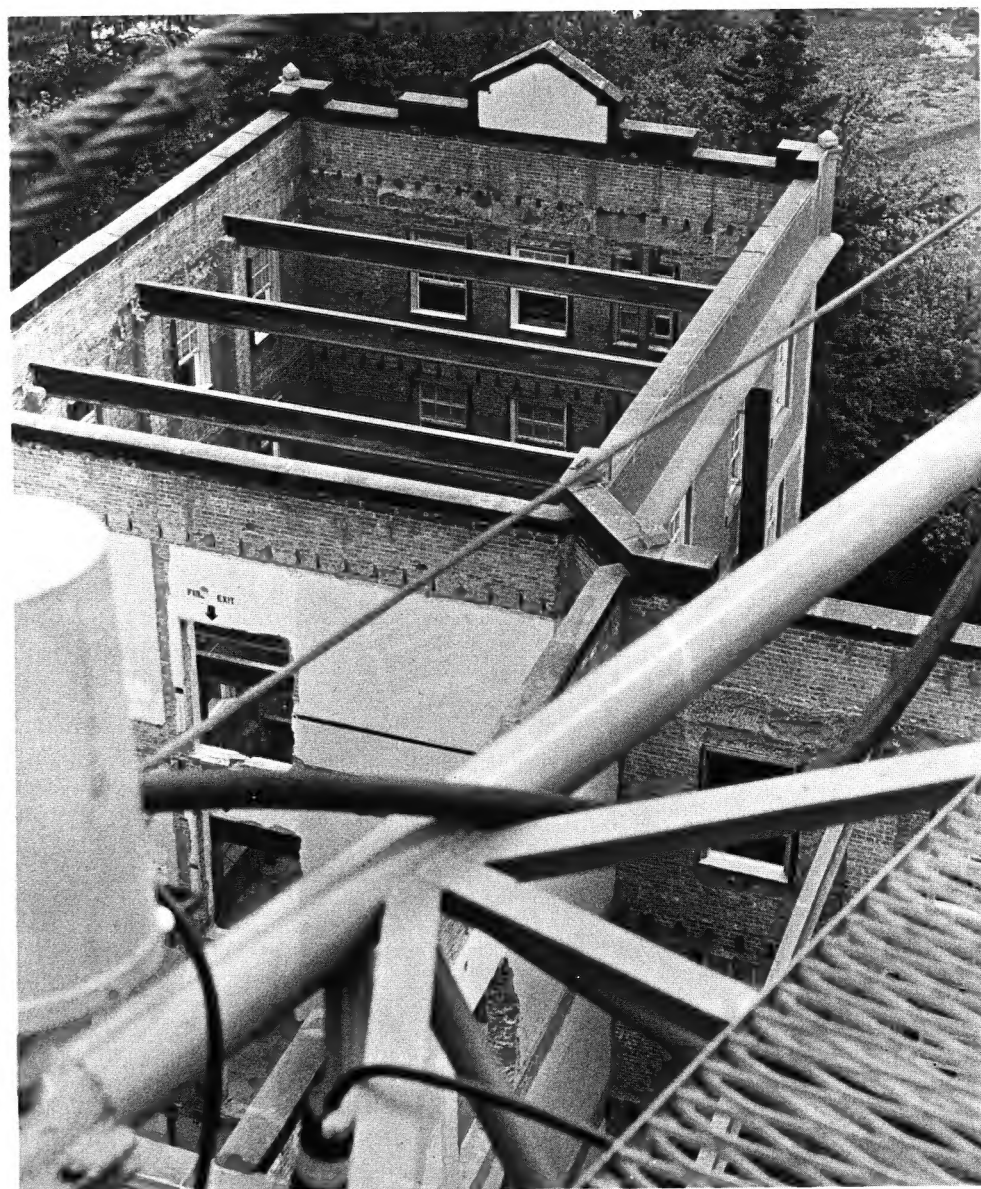
Construction began stripping the floors, it was discovered that a least one of the original crew was a very happy—and very careful—imbiber; eight whisky bottles, some complete with cork-lined neck and glass stopper, were discovered neatly concealed away either between walls, stuck in the studding, or underneath the ceiling plaster.

Fortunately, all of the stained glass from the foyer has been saved as well as all wood panelling in the library area. In addition, the fireplace has been preserved for ornamentation although the new interior will see an elevator placed beside it. As for the exterior, Mr. Olsen notes that despite the stress of demolition there is not a crack to be found in the masonry wall or sandstone.

The new Athabasca Hall will provide the University with 47,500 square feet of much needed space at reasonable cost. It is hoped that the building will house those service departments that are presently spread across campus, thus allowing their consolidation to distinguish them from those departments of a purely academic nature.



photographs by Richard Kerr



REUBEN BENJAMIN SANDIN LECTURE SERIES

The fifteenth annual Reuben Benjamin Sandin Lecture Series will be sponsored by the Department of Chemistry on 8 through 11 June. This lecture series commemorates over forty years of outstanding service rendered to the University by Reuben Sandin, Professor Emeritus of the Department of Chemistry.

The topic of this year's lectures is "Immunologically important bacterial polysaccharides." Bengt Gustaf Lindberg, Professor of Organic Chemistry at Stockholm University, is this year's lecturer. Professor Lindberg has investigated a wide range of carbohydrate chemistry and has made basic contributions to carbohydrate reactions and methodologies as well as technologically important studies in wood chemistry dealing with lignin, glycosides, and polysaccharides. In recent years he has made extensive investigations into the carbohydrate constituents of a wide variety of microorganisms including algae, lichens, and bacteria. Among his most noted contributions in this area is the elaboration of methodology and its application toward the understanding of the structures of immunologically important polysaccharides, glycoproteins, and lipopolysaccharides of various microorganisms. These studies have made significant contributions to the understanding of the structures of the antigenic determinants involved in the immune response to infectious disease.

On Tuesday, 8 June, Professor Lindberg will deliver a lecture entitled "Methods in structural polysaccharide chemistry." On Wednesday, 9 June, the lecture will be on "Polysaccharides containing unusual sugars." The following day, 10 June, Dr. Lindberg will speak on "Structure of some bacterial polysaccharides." The final lecture on Friday, 11 June, is entitled "Synthesis of artificial antigens." All lectures will take place at 11 a.m. in E1-60 Chemistry Centre.

PEOPLE

- Richard Frucht, Associate Professor of Anthropology, presented a paper before the New York Academy of Sciences conference, held during the last week of May, on Comparative Perspectives on Slavery in New World Plantation Societies. The paper, "From slavery to unfreedom in the plantation society of St. Kitts, West Indies," will be published as part of the *Annals* of the Academy.
- Saleem Qureshi, Professor of Political Science, at the invitation of the Pakistan

Congress of History and Culture and the Qaid-i-Azam Seminar, delivered two papers on "Violence in the political development of pre-independence India" and "The qaid and the evolution of Pakistan" at the Punjab University, Lahore.

■ Sheila Bertram, Associate Professor of Library Science; Nita Cooke, Librarian, Boreal Institute for Northern Studies; and Margot McBurney, Head, Order Department, Cameron Library, attended the fourth annual conference of the Canadian Association for Information Science at the University of Western Ontario, London. Ms. Cooke and Dr. Bertram presented a joint paper, and Dr. Bertram was elected a Director of CAIS for a two year term. Ms. McBurney also attended the mid-year meeting at the American Society for Information Science in Nashville, Tennessee.

VISITORS

■ B.G. Nickel, of the University of Guelph, spoke on the "Renormalized perturbation theory, scaling, and the calculation of critical exponents" at a theoretical physics seminar on 1 June. The seminar was sponsored by the Department of Physics.

BOOKS

■ *Craniofacial Embryology* (second edition) by Geoffrey H. Sperber, Professor of Oral Biology, Faculty of Dentistry, has been published by John Wright and Sons Limited, Bristol. The book is distributed in North America by Year Book Medical Publishers, Chicago, and Japanese and Spanish translations of the book are being prepared.

NOTICES

GENERAL FACULTIES COUNCIL SELECTION COMMITTEE VACANCY

The GFC Nominating Committee is seeking nominations for one member to be elected by General Faculties Council to serve on the *Selection Committee for a Dean of Business Administration and Commerce*. Regulations governing the composition of Selection Committees for Deans require that one member, not a member of the Faculty concerned, be elected by General Faculties Council.

Nominees who have suggestions for nominations or who are interested in serving on the above committee are requested to contact the

Secretary of the Nominating Committee, Lilian Plaskitt, 1-15 University Hall, telephone 432-4715.

UNI-ART FESTIVAL

The fourth annual Uni-Art Festival will be held On Saturday, 5 June, from 11 a.m. to 7 p.m. in the Edmonton Unitarian Church, 12530 110 Avenue.

The exhibition and sale of work done by more than fifty artists and artisans from the Edmonton area will include painting, sculpture, stained glass, pottery, jewelry, batik, macramé, and weaving. Tea and coffee will be served, entertainment will be provided, door prizes will be awarded, and art demonstrations, including on-the-spot portraits, will be given.

Tickets are available from church members and at the door.

HATHA YOGA

The University Yoga Fitness Centre will organize Hatha yoga classes for health, fitness, and relaxation. Classes will be held on the campus and in Millwoods. The next course, consisting of six weekly lessons, begins on 16 June. For more information, telephone Hubert Dhanaraj at 427-2015 or 462-3364, evenings.

MOVEMENT EDUCATION CLASSES

The Department of Movement Education is providing summer session courses in physical education. Children are wanted to participate in the following physical education activities under the supervision of the instructor:

Session A: 12 to 21 July, weekdays

2:00 p.m. to 2:30 p.m.

5 to 12 year olds

Session B: 12 to 16 July, weekdays

10:30 a.m. to 11:00 a.m.

5 to 8 year old

Session C: 2 to 6 August, weekdays

10:30 a.m. to 11:00 a.m.

9 to 12 year olds

All sessions will be held in the gymnasium in the Education Building. Children should wear appropriate clothing for practical work (shorts and shirt or leotard, running shoes). Children will receive movement experiences appropriate to their age level.

If you would like to register a child in one of these above sessions, please call the Department of Movement Education, 432-3652.

CASINO FOR ART

The Women's Society of the Edmonton Art Gallery will sponsor a casino at the Silver Slipper on the Edmonton Exhibition grounds on Friday, 11 June, from 5 p.m. to 2 a.m. and on Saturday, 12 June, from 12 noon to midnight. Proceeds from the casino will go toward purchasing works of art for the Permanent Collection of the Edmonton Art Gallery.

CORRECTION CONTINUED . . .

In last week's *Folio* there was a correction which stated that P.A. Robison was elected to the Administrative and Professional Officers Committee rather than G.A. Bulat. In fact, this is a mistake. Both G.A. Bulat and P.A. Robison were elected to serve on this Committee.

THIS WEEK AND NEXT

Listings must reach the Editor by 9 a.m. the Friday prior to publication. Written notification is preferred.

3 JUNE, THURSDAY

Cinematheque 16

7:30 p.m. *Five Easy Pieces* (United States, 1970). Directed by Bob Rafelson, and starring Jack Nicholson and Karen Black. Downstairs, Edmonton Art Gallery. Admission \$2.

4 JUNE, FRIDAY

Faculty Club

Downstairs. "From the grill." Steak sandwiches, hamburgers, French fries, and hot beef dips. *Upstairs.* "Spanish Special." Gazpacho soup, fish Mazatlan style, rice salad, and fruit flan. \$5.50. Lobster \$12.50. Also regular dinner menu; reservations required.

Cinematheque 16

7:30 p.m. *Joe Hill* (United States/Sweden, 1971). Directed by Bo Widerberg, and starring Tommy Berggren and Anja Schmidt. English version. Downstairs, Edmonton Art Gallery. Admission \$2.

5 JUNE, SATURDAY

Faculty Club

Downstairs. "From the grill." Regular lower lounge menu. *Upstairs.* Lobster \$12.50. Also regular dinner menu; reservations required. Entertainment: Gordon Schmidt Band.

6 JUNE, SUNDAY

Cinematheque 16

2 p.m. *Les Biches* (France, 1967). Directed by Claude Chabrol, and starring Jean-Louis Trintignant. English subtitles. Downstairs, Edmonton Art Gallery. Admission \$2.

8 JUNE, TUESDAY

Edmonton Jazz Society

8:30 p.m. New York jazz drummer Cliff Barbaro performs with Earl Seymour, Bill Emes, and John Sereda. The Hovel, 10907 Jasper Avenue. Admission is \$1.50 for EJS and Hovel members, \$2.50 for others.



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CULTURE
Historical Resources

Reuben Benjamin Sandin Lectures

11 a.m. "Methods in structural polysaccharide chemistry" by Bengt Gustaf Lindberg. E1-60 Chemistry Centre.

9 JUNE, WEDNESDAY

Reuben Benjamin Sandin Lectures

11 a.m. "Polysaccharides containing unusual sugars" by Bengt Gustaf Lindberg. E1-60 Chemistry Centre.

10 JUNE, THURSDAY

Reuben Benjamin Sandin Lectures

11 a.m. "Structure of some bacterial polysaccharides" by Bengt Gustaf Lindberg. E1-60 Chemistry Centre.

Cinematheque 16

7:30 p.m. *The Hireling* (Great Britain, 1973). Starring Robert Shaw and Sarah Miles. Downstairs, Edmonton Art Gallery. Admission \$2.

11 JUNE, FRIDAY

Reuben Benjamin Sandin Lectures

11 a.m. "Synthesis of artificial antigens" by Bengt Gustaf Lindberg. E1-60 Chemistry Centre.

Faculty Club

Downstairs. "From the grill." Steak sandwiches, hamburgers, French fries, and hot beef dips. *Upstairs.* "Jamaican Special." Curried chicken and condiments, rice and black-eyed peas in coconut cream, and fruit compôte. Also regular dinner menu; reservations required. Entertainment: Carribean Ambassadors.

Cinematheque 16

7:30 p.m. *Red Desert* (Italy, 1964). Directed by Michelangelo Antonioni, and starring Richard Harris and Monica Vitti. English subtitles. Downstairs, Edmonton Art Gallery. Admission \$2.

12 JUNE, SATURDAY

Faculty Club

Downstairs. "Barbecue Your Own." Steaks \$5.50, sausages \$4; salad and dessert. *Upstairs.* Regular dinner menu; reservations required.

Recital

8 p.m. Winnie Yiu, pianist, performs works by Bach, Beethoven, Debussy, Liszt, and Schumann. Provincial Museum Auditorium. Admission free.

EXHIBITIONS AND PLAYS

Provincial Museum

Until 27 June. "Why? Why Not?" a display illustrating some of the outstanding

contributions made to the natural sciences by nineteenth Canadian women of the nineteenth and twentieth centuries. Feature Gallery 3. *Continuing.* "Documentary Heritage," a long-term exhibition displaying valuable manuscripts and documents in the Provincial Archives of Alberta. Archives Gallery.

Edmonton Art Gallery

Until 28 June. "A Visual Poem—Children's Manipulation of the Painting Medium," an exhibition of paintings done by very young children.

Until 27 June. "The Milner Collection," a display of works by Canadian artists such as the Group of Seven, David Milne, Emily Carr, and Clarence Gagnon among others, taken from the collection of the late H.R. Milner.

Until 27 June. "R.L. Myren," an exhibition of paintings and drawings of landscapes by the Edmonton artist.

Until 30 June. "The New Artists," an exhibition of works by students graduating in the last year from the University's Master of Visual Arts program.

Opening 13 June. "Byzantine Churches of Alberta," a photographic display by Orest Semchishen documenting hundreds of pioneer Ukrainian churches in Alberta.

Northern Light Theatre

Until 5 June. Charles P. Schott blends the arts of clown, pantomime, and mime in *The Mime Show*. Downstairs, Edmonton Art Gallery. Performances Tuesday through Friday at 12:10 p.m. with extra performances on Thursdays and Fridays at 1:10 p.m. There will also be Saturday evening performances at 7 p.m. and 8:30 p.m. Admission to the weekday performances is \$2 regular and \$1 for senior citizens; admission to Saturday performances is \$2.50.

Theatre Network

Until 5 June. Theatre Network, Alberta's newest professional theatre company, presents world premiere of George Ryga's newest play *Seven Hours to Sundown*. The play revolves around the future of an old town church and the conflicts which arise among the townspeople. Studio Theatre, Corbett Hall. Admission is \$3 regular and \$2 for students. Tickets are available at Woodward's stores, Bonnie Doon, the Coliseum Box Office, the Students' Union Box Office in HUB Mall, and at the door on evenings of performances.

University Art Gallery and Museum

3 to 18 June. Two exhibitions will be displayed: Dave Scadding will be presenting his work for a Masters of Visual Communications Design and Joan Bouwmeester will be presenting her work for a Masters of Visual Arts in Painting. Gallery hours

a. om 10 a.m. to 4 p.m. Monday through Friday.

NON-CREDIT COURSES

INTRODUCTORY SYMPOSIUM ON THE MUSIC OF OUR TIME

The Contemporary Music Workshop, in cooperation with the Centennial Library, presents this six-week symposium, running from 7 June to 12 July on Monday evenings at 7 p.m. The symposium will serve as an introduction to modern music, covering a broad range of avant garde, post-modern, and contemporary classical music.

The instructor is Jerry Ozipko, an avant garde violinist and composer, and the symposium will take the form of lectures, discussions, listening, audio-visual presentations, demonstrations, and participation. The course is open to everyone and the tuition is \$15; registrations will be accepted up until the evening of 7 June.

For further information, get in touch with the Contemporary Music Workshop, 10801 82 Avenue, telephone 439-5166, or call the Centennial Library's Community Programs Office at 429-5351, extension 258.

FORUM SERIES ON REGIONAL GOVERNMENT

Regional form of government for the Edmonton region is an issue that is creating considerable public debate between the elected officials of the City of Edmonton and the elected officials of neighbouring municipalities and councils. In an effort to insert more data and information into this debate so that the relative merits and demerits of the alternative forms of regional government are better understood, the Faculty of Extension is offering a *Seminar on Regional Government*.

The seminar will provide participants with the opportunity to hear and talk with knowledgeable authorities who have been associated with the development and operations of this type of government in other areas of Canada. Resource staff will include Lloyd Axworthy, Director of the Institute of Urban Studies at the University of Winnipeg; Meyer Brownstone of the Department of Political Economy, University of Toronto; Andrew Currie, Deputy Minister of Urban Affairs for the Province of Manitoba; and Donald Collins, former Deputy Minister with a number of Ontario Departments of Government.

The two day seminar will take place 9 a.m. to 4:30 p.m., 21 and 22 June, in 120 Corbett Hall. Pre-registration is required in order to make the necessary administrative arrangements. Registration forms must be completed by 11 June. For further information contact J. Merrill McDonald, 432-3035.

POSITIONS VACANT

NON-ACADEMIC STAFF

To obtain further information on the following positions, please contact Personnel Services and Staff Relations, third floor, SUB, telephone 432-5201. Please do not contact the department directly.

Clerk (\$505-\$576)—Purchasing
Clerk Typist I (\$505-\$576)—Housing and Food Services (two positions)
Clerk Typist II (\$505-\$627)—Forest Science; Secondary Education; Bookstore; Faculty of Education; Faculty of Extension
Clerk Typist II (\$253-\$314) (part-time)—Western Board of Music
Clerk Steno II (\$527-\$653)—Mechanical Engineering; Physical Education; Medical Laboratory Science; Secondary Education; Student Counselling; Geography; Institutional Research and Planning; Office of the Vice-President
Clerk Steno II (\$527-\$653)—Athletic Services (term)
Clerk Typist III (\$576-\$713)—Biochemistry (trust)
Senior Clerk (\$576-\$713)—Housing and Food Services
Clerk Steno III (\$599-\$744)—Educational Administration; Athletic Services; Psychiatry; Office of the Registrar; Sociology; Faculty of Law; Psychology; Computing Services
Clerk Steno III (\$299-\$372) (part-time)—Faculty of Graduate Studies
Clerk Steno III (\$599-\$744)—Physics (trust)
Data Entry Operator I (\$599-\$744)—Computing Services; Office of Administrative Systems
Student Record Processing Clerk (\$627-\$779)—Faculty of Arts; Faculty of Education
Senior Student Record Processing Clerk (\$853-\$1,068)—Graduate Studies and Research
Secretary (\$683-\$853)—Boreal Institute; University of Alberta Health Services; Pathology; Faculty of Rehabilitation Medicine
Medical Records Librarian I (\$713-\$891)—Pathology
Library Assistant I (\$627-\$779)—Boreal Institute of Northern Studies
Executive Secretary (\$779-\$975)—Vice-President's Office, Planning and Development
Computer Assistant I (\$527-\$653)—Computing Services
Laboratory Assistant II (\$551-\$683)—Surgery; Transplantation Laboratory
Laboratory Assistant III (\$627-\$779)—Transplantation Laboratory
Research and Planning Analyst I (\$599-\$744)—Institutional Research and Planning
Technician I (\$713-\$891)—Pharmacology (trust)
Technician II (\$814-\$1,020)—Entomology
Biochemistry Technologist I (\$814-\$1,020)—Cancer Research Unit
Curriculum Technician II (\$814-\$1,020)—Industrial and Vocational Education
Audio Technician II (\$814-\$1,020)—Technical Services
Engineering Technologist I-III (\$779-\$1,283)—Physical Plant
Technologist I (\$814-\$1,020)—Zoology
Television Producer I-II (\$932-\$1,344)—Audio-visual Media Centre
Maintenance Worker II (\$932-\$1,171)—Physical Plant
Application Analyst (\$932-\$1,171)—Geography
Motor Mechanic II (\$975-\$1,225)—Plant Science
Analyst (\$1,171-\$1,474)—Business Administration and Commerce
Biochemistry Technician (open)—Microbiology (trust) (part-time)

The following is a list of currently available positions in the University Library. The bulletin board postings in the Library Personnel Office, 516 Cameron Library, should be consulted for further information as to position requirements and availability.

Library Clerk II (\$527-\$653)—Cataloguing

folio accepts display advertising

Size and rates: the basic unit size is 45 agate lines x 15 picas (3¼" x 2½"). The full page is divided into 9 such units, any combination of which is available at a cost of \$20 per unit. Half pages cost \$100. A professional/business card unit (2½" x 1½") is available at a cost of \$12. Discounts are offered for extended runs; please enquire.

Other specifications: half-tones (100-line screen or less) are acceptable; no color or bleeds. Camera-ready copy is preferred; there is a charge of 15c per word for typesetting, and \$5 per line for design of work which is not camera ready. Deadline for submission is one week prior to publication (Thursday, 4 p.m.) for camera-ready copy; 10 days for all other advertising copy. Positioning is at the discretion of the editor.

Contact: Richard Kerr or Esther Fraser, 326 Assiniboia Hall, The University of Alberta; telephone 432-4991.

Library Assistant I (\$627-\$779)—Out of Print;
Cataloguing
Administrative Clerk (\$428-\$535) (3/5 time)—
Administration (Personnel)

PERSONAL NOTICES

All advertisements must be received by 9 a.m. the Friday prior to publication. Rate is 15 cents per word for the first week, and 5 cents per word for subsequent weeks ordered before the next deadline. Minimum charge is \$1. Ads must be paid in advance. We regret that no ads can be taken over the telephone. For order forms or further information, telephone 432-4991.

Accommodation Available

Spencer Real Estate Ltd. has representatives specializing in re-locating University personnel. For professional assistance phone Mrs. Eid, 434-5780 or Mrs. Crockford, 434-0555; business, 436-5250.

All inquiries held in strictest confidence.

Selling: 1.71 acres river view land one-half mile southwest city limits, treed ravine, ready for building. Phone (evenings) 435-8467.

For rent—Mill Woods: brand new duplex, four bedrooms and family room; five appliances. \$475. 434-5037 after six.

For sale by owner: Riverbend, four bedrooms, one and a half baths, family room, reclaimed brick fireplace, large kitchen, many extras. Double garage, insulated; fully landscaped; close to schools, buses. \$89,000. 458-1022.

Professor wishes to sell three-bedroom bungalow; fully-developed basement, one and one-half baths, well-landscaped, heavily-treed, large lot, fully fenced; garage. Fifteen to twenty minutes from University. Priced to sell at \$68,900. Call Winson Elgersma at Melton's, 489-2551; 489-1856.

For sale by owner—Beautiful new 1,210 square foot bungalow with three bedrooms, 1½ baths.

Features include: bright, spacious family-style kitchen with patio doors and large pantry; formal dining room with attractive wooden railing; cozy sunken living room with brick fireplace. Large 10¾ percent mortgage. Fifteen minutes from University. Telephone 462-3957 or 425-0110 (extension 205). No broker. No commission.

Furnished suite to sublet July, August. Ideal for Summer School students. Prefer female or couple. Non-smoker. 422-1018.

For sale by owner. Walking distance from University.

Three-bedroom bungalow on quiet residential street. Approximately 1,400 square feet. Heated attached garage and fenced yard. Two-bedroom basement suite with living room, kitchen, bath, and separate entrance. Possession 31 August. 432-3862.

For rent—Windsor Park bungalow. 1 July 1976 to 31 August 1977. \$450. 433-5705.

For rent—three-bedroom house, furnished; one year beginning 1 August. Ten minutes from University. \$400 month. 465-4784.

For rent—two months: 10 June to 20 August. Three-bedroom fully furnished house in Belgravia. \$300 per month. 435-7129 or 432-1373; evenings, 439-4698. Principals only please.

For rent—West end, attractive brick home. Includes garage, large fenced and landscaped lot, fireplace, bath and a half upstairs, three-piece bath downstairs. Family room, games room, and two additional bedrooms downstairs. Fifteen minutes from University. \$575 per month. 462-3272 evenings.

Accommodation Wanted

Wanted—unfurnished bungalow, 1 August.

Single family, references. 435-6386.

House wanted—Professor arriving from New Zealand requires two- or three-bedroom home in University area. Will pay up to \$80,000. Please telephone Dorothy Hamilton, H.R. Kellough Realty, at 439-7371 or 434-6147.

Unfurnished house wanted. Graduate student and wife require a home near the University from 15 July or 1 August to summer 1977. Please telephone 458-0305.

From 1 September, bachelor apartment for the Fall Term (or room with bath and cooking facilities). Close to University. Write: Professor Eleanor Wimett, Box 25 R, Wading River, New York 11792.

Automobiles and Accessories

1973 Dart Sport two-door coupé, 318 automatic, power steering, power brakes, radio. Wife's car. Good condition. \$2,650 or best offer. 466-6789 after five.

For sale—1973 Nova; power steering, power brakes, radio. 30,000 miles. Superb condition. 432-3732 or 435-8694.

Goods and Services

Plumbing—for estimates on basement bathrooms, repairs, gasfitting, etc., call 465-7079.

Have sixteen horsepower Case tractor, rototiller, grass mower, levelling blade. Will do large residential yards, acreages, etc. Phone Jerry, 439-3531.



uni-art festival

Saturday, June 5—11 a.m. to 7 p.m.

Exhibition and Sale of
paintings, weaving, pottery, sculpture
stained glass, jewellery, batik, macramé
Gourmet fingerfood

Door prizes

Art demonstrations

\$1.50 admission

Unitarian Church 12530 - 110 Avenue

Pan-abode prefab log buildings, homes, cottage commercial. Phone Eric, 466-9883 after five.

Canadian Camping Tours. Come with us on a camping holiday. Travel the Alaska Highway and Inside Passage; twenty-two days, \$495. Hike in the Rockies of Banff and Jasper; twelve days, \$219. Canoe the Churchill River in Northern Saskatchewan; twelve days, \$382. Prices are all-inclusive. Flexible itineraries, shared activities, friendly atmosphere. It's all in our 1976 brochure. Write to: Canadian Camping Tours, 250 One Palliser Square, Calgary T2G 0P6.

Peking, Shanghai food. Delicious, inexpensive. Simple surroundings. Shanghai House, 6525 111 Street. 435-7622.

Student Painting. Interior-exterior; commercial-residential. 436-6242.

For sale—good quality used wool carpet, aqua; approximately sixty-two square yards. \$300. 436-1758.

Selling Olympic tickets. Details, telephone Eric, 432-1112.

For sale: fresh, freezer-ready lambs, \$1.25 pound; mutton, 65¢ pound. 432-3414, 963-3238.

Garneau School Kindergarten, 10927 87 Avenue. Registrations are being accepted for 1976, 1977 school term—morning class. Children must be five by 28 February 1977. For further information please telephone Garneau School, 433-1390; the teacher: Mrs. Marie Kuhn, 435-1469.

Antiques from England for sale. Tables, chairs, buffets, display cabinets, bookcases, stools, dolls, clocks, porcelain, art glass, Coronation ware, pictures, collectibles. Mary Goulden Antiques, Horsehill Hall: five miles north on Highway 15, then 1½ miles east. Open daily 1 p.m. to 6 p.m. including weekends. Closed Mondays. 973-3656 c 475-8139.

Antique, modern furniture, household effects, transistor, stereo, toys. 439-4795.

Handyman Carpentry Service. 434-9709, evenings.

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